

VORSIS Application Note

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Upgrading the VP8 To Software Version 2.3.x *

Six Mode Operation

(FM, AM, FM-HD, AM-HD, MP3/AAC>48k, MP3/AAC<48k)

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*** Note that we refer to VP8 Software Version 2.3.x in this document. This is because the VP8 GUI and VP8 firmware belong to the same release subset but have different minor revision numbers. The GUI software is Version 2.3.2 and the Firmware in the hardware is Version 2.3.0.*

Background

Vorsis VP8 Audio Processors were introduced at the April 2008 NAB as the *first* true multi-mode audio processor designed for the broadcast industry. At that time we'd completed work on the FM and AM operating modes but had released only the FM mode. In early September 2008 we introduced Version 1.5.0 software which updated the VP8 to two modes and made the improved version of the AM mode we'd been developing fully operational. In October 2008 the FM-HD and AM-HD processing modes were introduced. In April 2009 with work completed on the final two processing modes, MP3/AAC>48k and MP3/AAC<48k, two modes designed specifically to improve the sound of low-bitrate audio codecs, Version 2.3.x was released.

What's in Version 2.3.x?

The release of software Version 2.3.x brings the next two VP8 operating modes, MP3/AAC>48k and MP3/AAC<48k online. Both modes benefit greatly from specially designed processing algorithms designed to intimately interoperate with audio codecs operating at less than ideal bitrates.

The VP8 Upgrade Process Overview

It is not necessary to update a VP8 incrementally. A single, dual, or quad-mode VP8 can be upgraded directly to a six-mode version without having to first upgrade it to an intermediate version. Updating a VP8 consists of the following general steps, noting that a reboot** of VP8 is **required** at the end of the procedure in order to bring the new software and all of its new features online:

- ✓ Downloading the new software and presets;
- ✓ Documenting your current VP8 IP addresses;
- ✓ Removing a previous version of VP8 GUI software;
- ✓ Installing the new VP8 Version 2.3.2 GUI software;
- ✓ Configuring the GUI for your VP8 device(s);
- ✓ Connecting the GUI to the VP8(s);
- ✓ Downloading the Version 2.3.0 software to the VP8;
- ✓ Rebooting the unit to bring the new version online;
- ✓ Unlocking and deleting the original Factory Presets;
- ✓ Installing the new six-mode Factory Preset package;
- ✓ Relocking the new Factory Presets – recommended!

The above steps should be followed for each VP8 that you wish to upgrade.

** During reboot of the VP8 audio output will be interrupted while the new software code is being loaded and operating parameters initialized.

Downloading the New Software and Presets

Using your web browser, download the following files from the VP8 Vorsis Product Support folder located at:

<ftp://ftp.vorsis.com/VorsisSupport/GUI Software/VP8>

- ✓ **VP8GuiSetup_2_3_2.exe**
- ✓ **VP8_Factory_232.pkg**
- ✓ **Unlock.zip**

Documenting Your Current VP8 IP addresses

Before removing the existing VP8 GUI software it is advisable to first document the IP addresses of devices that may have been configured in a previous installation. Do this by opening the existing VP8 application, clicking on the Devices button, and then *carefully* making note of the device names and associated IP address entries listed in the popup box. You do not need to be Online to a VP8 to gather this information.

A Shortcut to Device Configuration

If a previous version of VP8 software is installed on the host PC and you wish to install the updated software into a different folder you can save a few steps on the device configuration dialog of the new GUI as follows:

1. Navigate to the current installation of VP8 GUI, usually C:\Program Files\Vorsis\VP8.
2. In that folder is a file named AP3QT.ini and a folder named "maps".
3. Copy those items to a new folder that will *not* be associated with the new GUI installation.
4. Install the new version 2.3.x GUI.
5. Before running the new v2.3.2 GUI for the first time, copy the AP3QT.ini file and 'maps' folder to the folder where the new GUI has been installed.

Now when you run the new GUI for the first time it will already be configured for any devices that had been configured in a previous installation.

Note that if a VP8 GUI has never been installed on the host PC this technique cannot work because there are no original VP8 GUI files to copy configuration data from.

Removing a previous version of VP8 GUI software

The Vorsis GUI software does not install any important entries into the Windows registry, so simply locating its folder and deleting it is sufficient to remove it.

Unless otherwise specified at installation time, Vorsis VP8 software is always installed into:

C:\Program Files\Vorsis\VP8

Please also ensure that any desktop shortcuts to the GUI software are updated if the GUI is deleted or the new installation path is different!

Installing the new VP8 Version 2.3.x GUI software

Next install the new GUI software by clicking on the **VP8GuiSetup_2_3_1.exe** executable file. When the dialog appears about our license agreement, click the "I Agree" button to proceed.

When the Installation Options dialog appears ensure that the checkboxes for the following are all checked:

- ✓ VP8 GUI
- ✓ Start Menu Shortcuts
- ✓ Skins
- ✓ Processor Upgrade Binaries

Then click Next to continue.

When the GUI installer asks for the Destination Folder either allow it to install into its default location or use the Browse button to point the installer to the folder where you would like the application to be installed. After installation is complete there will be a Start Menu item for VP8 under the Vorsis program name.

Once this is done, copy the following files to the folder where the VP8 GUI has been installed:

Unlock.zip - Please unzip this file into the "VP8" folder where the VP8 application has been installed. The executable file for the FactoryLock utility must reside within the VP8's application folder in order to work correctly!

VP8 Factory 232.pkg - This is the Factory Preset package for the six-mode VP8.

Configuring the GUI for your VP8 device(s)

If for some reason you did not or could not use the previously described shortcut for device configuration, Vorsis VP8 devices are configured by first starting the GUI application and then clicking on the Devices button on the right side of the GUI.

When the Devices dialog opens use the "Add" button to open the dialog where you will enter the Name and IP address of your new VP8 (or those of existing VP8's documented in previous steps). The Factory default hardware IP address of all VP8 units is 192.168.1.198.

If configuring the GUI for a single VP8 be sure to highlight the device and then click the "Select" button when you're finished configuring it to tell the GUI that this is the device that you wish to connect to. Otherwise the GUI will not know to use the configuration you created for connecting to a VP8 device.

Connecting the GUI to the VP8(s)

Once the VP8 device has been selected and the PC is connected to the VP8 via an Ethernet cable or Ethernet switch (a crossover cable is NOT required!), ensure that the VP8 is powered up and has fully booted.

Then click the button next to the Status indicator at the top of the GUI to put the GUI online with the VP8. When the Status shows "Online" you are ready to proceed with the software upgrade.

Downloading the Version 2.3.0 software to the VP8

Right click in the upper portion of the GUI (where the controls are) and a drop down menu will appear. Under the "Hardware" section is a selection called "Update" - please select it.

- ✓ A Windows dialog will appear showing the folder where the GUI is currently installed. Inside the folder is a file called "**vp8_2_3_0.vbn**" which is the update file that once downloaded to the VP8 will upgrade it to a six mode processor.
- ✓ Select this file and click "OK".
- ✓ A "Verify Download" dialog will appear showing the various versions of DSP, FPGA, and Application code that will be downloaded. Click "Yes" to proceed.

A download progress dialog will be displayed as the upgrade is transmitted to and stored within the VP8.

Rebooting the unit to bring up the new version

When the software download has finished you will be prompted to reboot the VP8 and doing so will load in the new software and its features. Please do it when prompted (and please... not before!).

Unlocking and deleting the original Factory Presets

NOTE: Because previous Factory presets didn't know anything about operating modes beyond the software version that was previously installed in the VP8, they will load if selected but *may* not work correctly in the new software until some changes are made once you load the new software.

Customer-created presets should also work properly *after* some adjustments are made in the Lim/Clip Drive control located in the FM and AM mode's limiter screens. This is because there may be up to an 8dB difference in this control's setting between old and new software depending on the previous software version and how aggressively the control has been adjusted in the previous software version.

→ If you hear either gross distortion or wimpy air sound after loading a previous preset into the new software, please check the Lim/Clip Drive control first!!

It is always a good idea to recheck the settings of all Output controls when software is updated. This is because algorithm changes may have slightly altered the absolute peak levels fed to those controls, making it advisable to double check their settings before placing the unit back in service.

Once the VP8 software is updated the next step is to purge the old Factory Presets from the VP8 hardware. Then the new Factory Presets that specifically target the new VP8 operating modes and the firmware improvements made since the previous software was released will be installed.

In order to accomplish the updating of Factory Presets a special software utility called ***FactoryLock.exe*** is required. This file should have been downloaded from ftp.vorsis.com as part of the preparation for the VP8 upgrade.

As mentioned before, this utility, unzipped and in its .exe form must reside within the folder where the GUI application has been installed. Otherwise the utility cannot modify the GUI application in order to grant it permission to unlock and/or delete Factory-locked presets.

Note also that the GUI must not be running when the Unlock tool is used. If the GUI is running it will deny the FactoryLock utility access to modifying it!

Using the FactoryLock.exe Tool

- ✓ If the GUI is currently running, you *must* exit it first because FactoryLock cannot patch the permissions level of the GUI program while it is running!
- ✓ Navigate to the folder where the Vorsis GUI is installed and open its folder.
- ✓ Locate the FactoryLock.exe file and double click it. Its command window will open as shown:

```

C:\Documents and Settings\Administrator\Desktop\APK_0_40_1\AP1000\factorylock.exe
Vorsis GUI factory feature Lock/Unlock tool
Version 1.0
Copyright Wheatstone Corporation, 2008
Enter U to unlock, or L to lock:
  
```

- ✓ The command window will be prompting you for the input character associated with the action to take; “U” or “L”.
- ✓ Please enter a “U” at the prompt. This will instruct FactoryLock to grant Factory level unlock privileges to the VP8’s GUI.
- ✓ After the command has been input and the keyboard’s Enter key pressed the program will prompt you to press any key to exit the utility. When you do so, the command window will close.

Using the New Privileges to Unlock Presets

The next time the GUI is started and the Presets menu is accessed it will have a new option available when a preset is right clicked from within the Library window – Factory Lock Preset.

Whenever the “Factory Lock” option is available to the GUI it enables it to *Factory Lock* presets. Once this permission is enabled the GUI will also have rights to ***unlock*** Factory presets!

- ✓ Start the GUI and connect to the VP8.

- ✓ With the Preset Library dialog open and using usual 'Windows' techniques highlight all the Factory presets between position #9 and the highest numbered factory preset.
- ✓ While the presets are highlighted right click and select "Un-lock Preset".
- ✓ Each preset will be unlocked in turn - they are unlocked from Factory Status when they no longer have a red padlock to the left of their names.

NOTE: If you ran FactoryLock.exe with the "U" option and then later discovered that the GUI does *not* have an option for Factory Lock, it simply means that FactoryLock.exe was *not* run from the same *folder* that the GUI you are running resides in, or that the GUI was still running when FactoryLock was run!

Deleting Factory Presets

Next, we will delete the old Factory Presets stored within the VP8 hardware.

Again, you must be online with the VP8 that is to be updated and also have the Library dialog open (by clicking on the Library button on the right side of the GUI).

You must also have already unlocked the Factory presets to be deleted using the instructions in the previous step.

- ✓ Using usual Windows techniques again highlight all the presets between position #9 and the highest numbered Factory Preset.
- ✓ Right click again but now choose the "Delete" option. An "Are You Sure" dialog will open.
- ✓ Click "Yes" to continue.
- ✓ Each Factory preset will be deleted in turn, and when the process is finished there will be no longer be any Factory Presets on the VP8 hardware!

You will also probably notice that suddenly the scrolling preset window on the PC GUI and on the VP8 front panel are displaying "??????".

This is because the presets have been removed from the hardware but the previous preset's settings are still intact. At this point the VP8 doesn't know what preset is running (even though it's still running one!) because we stole its name when we deleted the stored presets on the hardware!

Installing the new Factory Preset package

The process for installing new factory presets is as easy as deleting the old ones.

- ✓ With the GUI application running and connected to the VP8, open the Preset Library module.
- ✓ Highlight the Favorites folder in the upper right of the window and right click it.
- ✓ Near the bottom of the options list is "Install Preset Package" - please select this option.
- ✓ A dialog will open asking for the location of the preset package. If you have carefully followed all of the instructions up to now the new **VP8_Factory_232.pkg** preset package will be listed in the dialog window. If so, please select it and then click "Open".
- ✓ Once you do this the new preset package will be loaded into the PC GUI and into a new "VP8_Factory_232" sub folder located under Favorites.
- ✓ Selecting and highlighting this new folder will cause the new factory presets to appear in the lower window.
- ✓ Use the mouse to grab the corner of the Preset Library dialog and drag it open so that you can see the *entire* list of presets.
- ✓ Each preset should have a red padlock beside it indicating that they were Factory Locked when the package was created.

Next we'll drag the new presets over from the PC to the VP8 hardware. We recommend using the following preset numbering convention:

VP8 Operating Mode	Preset Locations
Bypass**	Assigned to slot #9
FM Mode	Assigned to slots 10-20
AM Mode	Assigned to slots 21-28
FM-HD Mode	Assigned to slots 29-35
AM-HD Mode	Assigned to slots 36-42
MP3/AAC >48k Mode	Assigned to slots 43-46
MP3/AAC <48k Mode	Assigned to slots 47-51

See the graphic on the last page of this application note for how the new VP8_Factory_232 presets should appear once loaded into the VP8

Using the above convention the 80 preset storage slots are utilized as follows:

- Slots 1 through 8 – User* presets assigned to the 8 GPI hardware inputs;
- Slot 9 – Normally reserved for the Bypass preset. **
- Slots 10 through 51 – Utilized for storage of Factory Presets;
- Slots 52 through 74 – Twenty three open slots for user** presets;
- Slots 75, 76, 77, 78, 79, and 80 are used by the system to store the last preset used in a particular mode.

* Total “user” preset storage availability is thirty one (31) preset slots.

** The Bypass preset is normally associated with Mode 1 (FM) but may be mode-locked to any mode as desired.

The preferred method for moving the new Factory presets into the VP8 hardware is to:

- ✓ Highlight the presets by their mode category (i.e., highlight all of the FM mode presets at one time).
- ✓ Grabbing the topmost preset of the highlighted category using the mouse, drag it over to the first numbered slot for that mode (i.e., “A QuickStart FM” would go into slot #10) and all presets greater than #10 should automatically follow suit and fall into their correct slots.
- ✓ If you make a mistake simply delete the errant presets on the VP8 hardware (left) side of the Preset Library dialog and try again.

Once all the new Factory presets are loaded onto the VP8 hardware we recommend relocking them to protect them from inadvertent deletion or writing over. To do this:

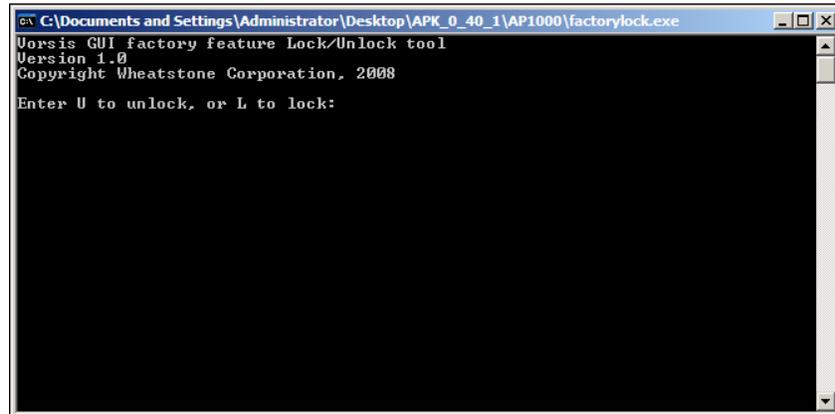
- ✓ Use Windows techniques to again highlight all the presets on the VP8 hardware side of the Preset Library dialog.
- ✓ Once highlighted, right click and select “Factory Lock Preset”.
- ✓ Once this is done, each of the presets will be factory locked in turn until the process completes. A preset is Factory Locked when there is a red padlock displayed to the left of its name.

Important FM Mode Note: Note that after this software upgrade it is a good idea to review the FM mode’s FM Limiter screen to ensure that the pre-emphasis (Emphasis) selection is set according to your needs.

Disable the Factory Unlock/Lock

NOTE: This step is very highly recommended!

Close the Preset Library dialog and exit the GUI application. Navigate to the folder where the new VP8 GUI is installed and double-click the FactoryLock.exe file again. The following dialog will open:



Please enter "L" and hit enter. Then hit enter again to exit the FactoryLock dialog. This sets the GUI's permissions back to user level protecting Factory presets from inadvertent overwriting or deletion.

Why Relock the Factory Presets?

We *strongly* recommend that Factory Presets be relocked after being updated to ensure that there is always a safe place to return to in the event adjustments get "way out in the weeds" and the need arises for a sane place to return to.

Don't say we didn't warn you!

Note that you can also use the FactoryLock utility to "Factory Lock" your own presets using the procedure we just outlined. This is a handy feature for consultants or situations where it might be desired to limit what presets exist in a VP8 that can be recalled.

And YES... a VP8 could in fact have just ONE preset!

New Features in VP8 Version 2.3.x

Improved FM and AM Clippers

In modes associated with "*clipper*" use, i.e., FM and AM, users will find that the VP8's main clipper algorithm has been again improved over the previous version. This will allow greater freedom in adjusting Lim/Clip Drive before incurring a distortion penalty when tuning for maximum loudness. High frequencies will be cleaner and smoother, and artifacts associated with vocal sibilance will be noticeably improved. Most users will find that they can adjust the Lim/Clip Drive more aggressively now if desired.

Multiband Limiter Improvements

The eight-band limiter has been improved over the previous version and among other changes the limiters now have rescaled time constant controls that permit finer adjustment of each band's limiting characteristics. This change also allows each of the multiband limiters to be operated with an 'illegal' release time, which, when operating in concert with the Voris Bass Management System (VBMS), can create special 'big bass' sonic effects down in the extended bass region without any negative impact on the perceived cleanliness of midrange and highs.

Two New Codec Processing Modes

The new codec processing modes, MP3/AAC>48k and MP3/AAC<48k are based on sophisticated new algorithms that permit increased audio quality and listenability for situations employing bit-reduced mediums such as web streaming. These algorithms are so unique and different from each other that it was necessary to segregate them into two separate operating modes of the VP8.

The MP3/AAC>48k mode is intended for audio codec-based applications where the bitrate in use is above 48kFPS. This mode contains a subset of the tools available in the more complex processing mode, MP3/AAC<48k. Because of how the algorithms in this mode condition audio prior a codec, truly great sound quality is achieved with a minimum of codec-induced artifacts.

The MP3/AAC<48k mode is more complex than the ">48k" mode and has all the tools required to extract every bit of performance from 'low bitrate' audio codecs. This mode is targeted at low and very low bitrate applications that use various forms of stereo transmission using a side channel (such as AAC's Parametric Stereo) or mono speech. Excellent subjective sound quality is achieved even at bitrates as low as 16kFPS.

Important notes about modes and presets...

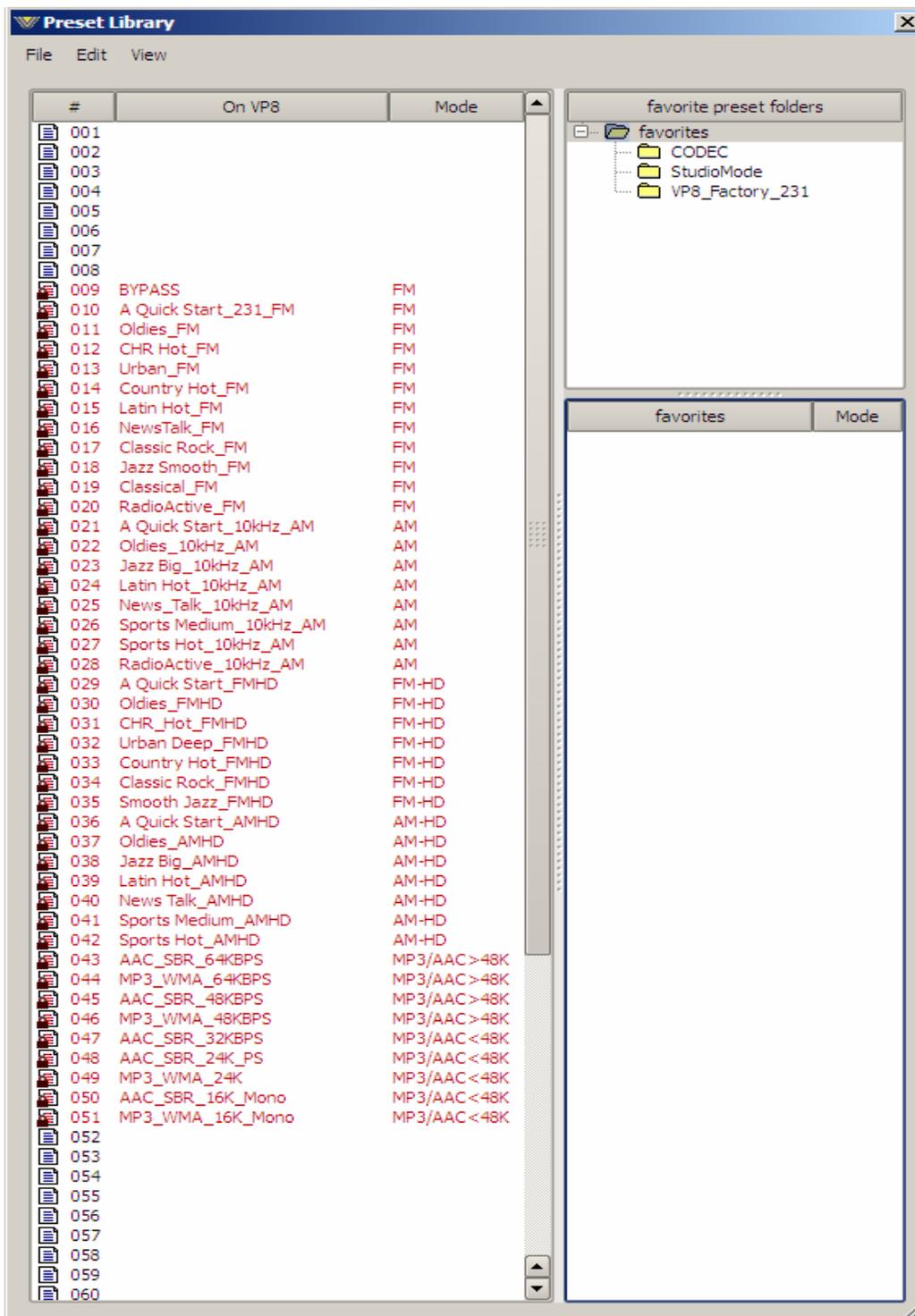
- We have purposely not permitted mode changes from the VP8's front panel because of the completely different I/O requirements typically associated with each mode. In fact, you can only see presets associated with the current mode from the front panel preset selector window.
- If you simply change modes from the System menu and not by selecting a preset from a different mode, the system must know what preset to run in that mode. In this case it will be the last preset used in the selected mode.
- If there *is* no 'last used preset' for a mode yet, the VP8 will prompt you to select the preset you wish to run in the new mode. If you do not select a preset, the processing mode will not change!
- Once a 'last used preset' exists for a mode that preset will be loaded each time you select that mode. If you wish another preset to be the 'last used one' in a particular mode, simply select one once you're in that mode and the VP8 will remember it the next time you go back to that mode.
- We suggest naming presets using the convention we used when the Factory presets were created. Each of the preset names ends with something related to the mode that they belong to. This is not mandatory, but is suggested in order to make it obvious which mode a preset belongs to just by looking at its name.

VP8 Processing Mode Changes

Method	Permitted	Not Permitted
<i>GPI Input</i>	✓	
<i>Automation*</i>	✓	
<i>Scheduler</i>		✓
<i>VP8 Front Panel</i>		✓

* Please contact your program automation system's vendor for details on how to use your automation system to change VP8 operating modes.

This is how the new Factory_232 presets should appear once loaded into the VP8 hardware. The CODEC and StudioMode folders shown below "Favorites" in the graphic will only be present if they have been manually loaded into the VP8 after being downloaded from ftp.vorsis.com.



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